

FROM Chief, PPBS			DATE 14 May 1970	
TO	INITIALS	DATE	REMARKS	
DIRECTOR	4	all 5/18	Excellent trackoff amount FYI CUC	
DEP/DIRECTOR	3	5/15		
EXEC/DIRECTOR	②	5/15		
SPECIAL ASST	①	5/15		
ASST TO DIR	5	5/18		
ASST TO DEP/DIR				
CH/PPBS				
DEP CH/PPBS				
EO/PPBS				
CH/IEG				
DEP CH/IEG				
EO/IEG				
CH/PSG				
DEP CH/PSG				
EO/PSG				
CH/TSSG				
DEP CH/TSSG				
EO/TSSG				
CH/SSD/TSSG				
PERSONNEL				
LOGISTICS				
TRAINING				
RECORDS MGT				
SECURITY				
FINANCE				
DIR/IAS/DDI				
CH/DIAXX-4				
CH/DIAAP-9				
CH/PPBS				

Here is a PPBS prepared  
memo reporting  
on the 5 May meeting  
at which the basic  
decisions were reviewed  
and acted on relating  
to light table and  
diamond program.

Good. ff

DECLASS REVIEW by NGA/DOD



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R x D: 1

14 May 1970

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## MEMORANDUM FOR THE RECORD

SUBJECT: Center Decision on the Light Table and Rhomboid Problem

1. On 5 May 1970, the Executive Director, NPIC met with the Chiefs of IEG, TSSG, and PPBS, and members of their organizations, to be briefed on the 1540 light table/rhomboid situation and to receive a recommendation as to the course of action to pursue regarding these items of equipment.

2. Following introductory remarks by the Chief, PPBS as to the purpose of the briefing, [ ] IEG presented the factors and rationale which were the basis for IEG's decision to utilize the [ ] Model 28 Rhomboid (as opposed to the [ ] Model II) and the [ ] light table (as opposed to the [ ] presentation are shown below:

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25XA. Light Table

[ ]

Outstanding film drive system.

Dry light source.

Quiet and cool operation.

Poor stereoscope mount design.

Counterbalance system for carriage movement in "Y" axis inferior.

Other minor design and human engineering deficiencies.

[ ]

Outstanding stereoscope mount design.

Film threading display and automatic switching feature superior.

Poor film drive system.

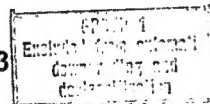
Excessive heat from light source.

Poor history of performance from liquid cooled light source - leaks and air bubble formation.

Recent phenomenon of green hue in the mineral oil (coolant).

Other minor deficiencies and human engineering deficiencies.

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SUBJECT: Center Decision on the Light Table and Rhomboid Problem

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(1) Both the [ ] prototype tables require rework or modification to several features. The companies provided their solutions to each problem in letters of intent, presenting their methods for solution in general terms.

(2) TSSG/RED analysed the proposed solutions and assigned confidence statements to each. These statements, plus IEG's assessment, result in relatively high confidence that [ ] can correct their deficiencies and produce an acceptable light table. This confidence is based primarily on the strength of their outstanding film drive system and the cool, "dry" light source.

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(3) [ ] may be able to correct most of their deficiencies; however, the many problems associated with the liquid cooled light source, and the history of poor performance of this type of light source on their 940 Split Format Light Tables introduces a high degree of uncertainty in [ ] ability to solve this problem.

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(4) Unit costs significantly favor the [ ] table.

25

#### B. Rhomboids

##### Model 28

Image rotation in eyepieces.

Objective lenses not parfocal-  
working distances not uniform.

Interchangeable objective lenses.

Individual focus control on each  
objective lens.

0.43X, 1.0X and 2.0X objective lenses -  
3-60X magnification

Rhomboid assembly slides to rear of  
Zoom 240 Pod when operation is  
changed from stereo to mono.

Stereo mode - 10% less light trans-  
mittance than the Model II.

##### Model II

Image rotation in the  
rhomboid arms.

Parfocal objectives and  
uniform working distance.

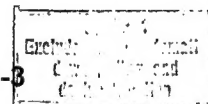
Interchangeable objective  
lenses.

Individual focus control  
on each objective lens.

1.0X, 2.0X and 3.0X objective  
lenses - 7-90X magnification.

Automatic shift via optical  
switch - stereo to mono or  
vice versa.

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Mono mode - 5 time more light  
transmitted than the Model II.

Stereo mode - 10% more  
light transmittance than  
the Model 28.

Optical resolution essentially  
equal to Model II. Slightly  
less "off axis."

Optical resolution essentially  
equal to Model 28. Slightly  
better "off axis."

(1) From a subjective standpoint, the IEG photointerpreters considered the two instruments to be equal in performance in the stereo mode. However, the light reduction in the Model II in the mono mode is dramatic; the PI's were unanimous in their preference for the Model 28 for mono operation.

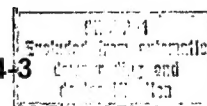
(2) An experiment was conducted by TSSG/RED/ATB and the  25X  
 to assess the effect of light loss on interpretability. The experiment, utilizing IEG PI's as subjects, compared the two instruments in stereo and mono modes of operation. PI performance in the stereo mode was approximately equal when viewing with the Model II and the Model 28. In the mono mode, the percentage of confidence in reporting targets was slightly higher for the Model 28. The significance of this difference and the effect it might have on the exploitation process is unknown.

(3) The Model II operational utility is less encumbered than the Model 28. The physical actions required of the operator to change from one mode of operation to another are minimized by the parfocality of objective lenses and the optical switch of the Model II. However, the light loss in the mono mode of the Model II, and the psychological effect this loss has on the PI, make the mono mode of operation of the Model II undesirable.

(4) In summary -

- a. Approximately equal optical resolution qualities of the Model II and Model 28.
- b. Approximately equal performance of each system in the stereo mode.
- c. Apparent higher performance of the Model 28 in the mono mode.
- d. Psychological effects of light loss in mono of the Model II.

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SUBJECT: Center Decision on the Light Table and Rhomboid Problem

- e. PI preference for the Model 28.
- f. More rapid production of the Model 28.
- g. Significantly lower cost of Model 28.

3. The second portion of the briefing, given by Chief, IEG was a runout of PI positions within the Center, the purpose of which was to provide the basis for the third portion of the briefing - the numbers of light tables/rhomboids required by IEG.

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[ ] presented the following information:

	<u>Number of PI's</u>	
	<u>CIA</u>	<u>DIA</u>
FY 70 T/O	114	116
FY 71 T/O	20	20
Conversion in FY 71 T/O of CSR's to PI's	9	
Additional req. upon DIA to match CIA's input		<u>7</u>
	143	143
Less PI supervisors	<u>13</u>	<u>13</u>
Working PI's	130	130

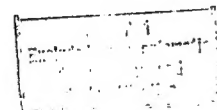
4. On the basis of the numbers of working PI's, and the decision by IEG that each of these PI's must be equipped with the 1540/rhomboid set in order to exploit the mission inputs predicted, [ ] IEG, proposed that IEG's total equipment order for light tables should be as follows:

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260	-	1 each working PI
<u>5</u>	-	maintenance, training, etc.
265		

It was recognized that this statement of equipment needs differed from earlier statements in two respects; namely, (1) our previously indicated (5-Year Plan, etc.) total was for 223 units, and (2) the light table total was previously spread through FY 73. The decision to increase the numbers was based on the following:

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SUBJECT: Center Decision on the Light Table and Rhomboid Problem

a. A reassessment by Chief, IEG of the situation the [ ] will impose upon IEG's exploitation resources, and the action taken by IEG, in this regard, to convert 9 collateral support positions to working PI positions.

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b. A review of the 940 light tables presently in IEG's inventory and the decision not to supplement the 1540 inventory by these 940's.

5. The last part of the briefing was concerned with alternative approaches to meeting the funding requirements of the 1540's and rhomboids. These alternatives are covered in Attachment A.

6. At this meeting the Executive Director, NPIC made the following decisions:

a. 265 sets (light table plus rhomboid) of equipment are basic to the Center's exploitation needs;

b. the [ ] Table and the [ ] Model 28 Rhomboid be acquired to satisfy the total inventory needs of 265 sets;

c. to accept the alternative funding approaches recommended, with emphasis being placed on Alternative 1 - a request that additional funding for the total package be requested;

d. no further R&D work at this time be undertaken on the [ ] Model II Rhomboid;

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e. The FY 70 R&D project proposal, Low Power Objective Lenses [ ] be placed in hold because of its direct relation to the Model II Rhomboid; and

f. consideration be given by TSG for a project in the FY 71 R&D Program devoted to investigating methods of improving light sources - for example, point light sources or collimated light.

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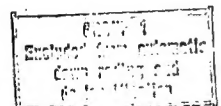
[ ]

Chief

Planning, Programming & Budgeting Staff

Distribution:

Orig - NPIC/ODIR  
1 - NPIC/IEG  
1 - NPIC/PSG  
1 - NPIC/TSSG  
2 - NPIC/PPBS





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Approved For Release 2005/06/22 : CIA-RDP78B05703A000100070014-3

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Approved For Release 2005/06/22 : CIA-RDP78B05703A000100070014-3



COMMUNITY REQUIREMENTS

Mod "28" Rhomboid

Air Force	-	29
Navy	-	15
DIA	-	6

50

NPIC		265
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315

IAS (?)		12
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327

☐ Light Table

Army	-	27
Air Force	-	63
IAS	-	16

106

NPIC		265
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371

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PRODUCTION

	<u>Mod "28" Rhomboid</u>	<input type="checkbox"/> <u>Light Table</u> 25X1
By Jan '71	60	90
Feb	80	130
Mar	100	170
Apr	120	210
May	140	250
Jun	160	290
July	180	330
Oct	240	
Jan '72	300	
Feb	320	

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